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Natural rubber latex concentrate — Determination of alkalinity

Latex concentré de caoutchouc naturel — Détermination de l'alcalinité

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 125 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This fourth edition cancels and replaces the third edition (ISO 125 : 1983), of which it constitutes a minor revision.

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Natural rubber latex concentrate — Determination of alkalinity

1 Scope

This International Standard specifies a method for the determination of the alkalinity of natural rubber latex concentrate.

The method is not necessarily suitable for latices from natural sources other than *Hevea brasiliensis* or for synthetic rubber latices, compounded latex, vulcanized latex or artificial dispersions of rubber.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 123 : 1985, *Rubber latex — Sampling*.

ISO 976 : 1986, *Rubber latices — Determination of pH*.

3 Principle

Titration of latex concentrate with acid to pH 6 in the presence of a stabilizer, either electrometrically or with methyl red as visual indicator, and calculation of its alkalinity from the quantity of acid which is required.

4 Reagents

Distilled water or water of equivalent purity shall be used wherever water is specified.

4.1 Stabilizer solution: 5 % (*m/m*) solution of a non-ionic stabilizer of the alkyl phenol polyethylene oxide condensate type. Before use, the pH of the solution shall be adjusted to a value of $6,0 \pm 0,01$.

The following reagents shall be of recognized analytical quality:

4.2 Sulfuric acid, $c(\text{H}_2\text{SO}_4) = 0,05 \text{ mol/dm}^3$, or **hydrochloric acid**, $c(\text{HCl}) = 0,1 \text{ mol/dm}^3$, standard volumetric solution.

4.3 Methyl red, 0,1 % (*m/m*) solution in ethanol of 95 % (*V/V*) minimum purity.

This solution is not required when electrometric titration is used.

5 Apparatus

The following apparatus is required when electrometric titration is used:

5.1 pH-meter, equipped with glass electrode and saturated calomel cell, and capable of being read to 0,02 units.

5.2 Glass electrode, of a type suitable for use in solutions of pH up to 12,0.

5.3 Mechanical stirrer, with earthed (grounded) motor and non-metallic paddle, or **magnetic stirrer**.

6 Sampling

Carry out the sampling in accordance with one of the methods specified in ISO 123.

7 Procedure

Calibrate the pH meter using the method specified in ISO 976.

To about 200 cm³ of water contained in a 400 cm³ beaker add, while stirring, 10 cm³ of the stabilizer solution (4.1). Weighing to the nearest 10 mg, add by difference from a weighing bottle between 5 g and 10 g of the latex concentrate and stir thoroughly.

Insert the electrodes and, with continual stirring, add from a burette the sulfuric acid or hydrochloric acid solution (4.2) until the pH is reduced to a value of $6,0 \pm 0,05$. Add the acid drop by drop on approaching the end-point.

As an alternative to electrometric titration, use methyl red (4.3) as visual indicator, taking the end-point as the colour change to pink.

Carry out the determination in duplicate.

8 Expression of results

Calculate the alkalinity of the latex concentrate as specified in 8.1 or 8.2, whichever is appropriate.

8.1 If the latex concentrate is preserved with ammonia, calculate the alkalinity as grams of ammonia (NH₃) per 100 g of latex as follows:

$$\text{Alkalinity (as NH}_3\text{)} = \frac{F_1 c V}{m}$$

where

F_1 is a factor: 1,7 for hydrochloric acid or 3,4 for sulfuric acid;

c is the actual concentration, expressed in moles of HCl or H₂SO₄ per cubic decimetre, of acid used;

V is the volume, in cubic centimetres, of the acid used;

m is the mass, in grams, of the test portion.

If the results of the duplicate determination differ by more than 0,02 units where the actual alkalinity is above 0,5 units, or by more than 0,01 units where the actual alkalinity is 0,5 units or less, repeat the determination.

8.2 If the latex concentrate is preserved with potassium hydroxide, calculate the alkalinity as grams of potassium hydroxide per 100 g of latex as follows:

$$\text{Alkalinity (as KOH)} = \frac{F_2 c V}{m}$$

where

F_2 is a factor: 5,61 for hydrochloric acid or 11,22 for sulfuric acid;

c , V and m are as defined in 8.1.

If the results of duplicate determinations differ by more than 0,03 units, repeat the determination.

9 Test report

The test report shall include the following information:

- a) a reference to this International Standard;
- b) all details necessary to identify the test sample;
- c) the results, and the form in which they are expressed;
- d) details of any operation not included in this International Standard or in the International Standards to which reference is made, as well as details of any incident likely to have affected the results.

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